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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
09/130,937	08/07/98	MORANDO J	MJV-117-A

CHARLES W CHANDLER
33150 SCHOOLCRAFT
LIVONIA MI 48150

QM02/0907

EXAMINER
NGUYEN, N

ART UNIT	PAPER NUMBER
3745	5

DATE MAILED: 09/07/99

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/130,937

Applicant(s)
Morando

Examiner
Ninh Nguyen

Group Art Unit
3745



☐ Responsive to communication(s) filed on _____.

☐ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, **prosecution as to the merits is closed** in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-16 and 18-68 is/are pending in the application.

Of the above, claim(s) 29-45, 57-60, and 65-68 is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-10, 15, 16, 18-24, 28, 46-51, 55, and 61 is/are rejected.

☒ Claim(s) 11-14, 25-27, 52-54, 56, and 62-64 is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☒ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☐ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been
☐ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____.

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☒ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☒ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

The pre-amendment date 09/16/98 has been acknowledged and entered. As a result, claim 17 has been withdrawn from further consideration.

Election/Restriction

1. Applicant's election without traverse of the invention of Group I and the species of Figure 1 in Paper No. 4 is acknowledged. Applicant has considered claims 1-28, 46-56, 61, and the linking claims 62-64 to be readable thereon.
2. Claims 29-45, 57-60, and 65-68 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b) as being drawn to a non-elected invention or a non-elected species of the Group I invention. Election was made **without** traverse in Paper No. 4.

Claim Objections

3. Claim 10 is objected to because of the following informalities:

On line 10, right before "structure", --a-- should be added.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

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5. Claim 18 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Lines 12-14 of the claim read: “**a tubular shield means** of a heat resistant telescopically receiving the shaft and having a length **longer than the shield means** so that the lower end of the shield means extends beyond the lower end of the shaft;”.

Shield means cannot have a length longer than themselves. The applicant should consider replacing “shield means” on line 13 of the claim with --shaft-- as disclosed in the specification to avoid indefiniteness.

NOTE: claim 18 will be treated as if the “shield means” has been replaced with the --shaft-- in the 102 rejections below.

6. Claims 8, 15, 28 and 61 are rejected under 35 U.S.C. 112, second paragraph for lacking of antecedent basis for limitations in the claims.

Claim 8 recites the limitation "the tubular shield encloses the pumping shaft but does not rotate therewith" on lines 2 and 3 of the claim. There is insufficient antecedent basis for this limitation in the claim.

This limitation is not disclosed in the specification. In fact, this limitation contradicts to the disclosure on page 6, lines 1-3 and from page 6, line 21 to page 7, lines 1-4 that the tubular shield does rotate with the shaft.

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Claims 15, 28 and 61 recite the limitation "disposing a wax that turns into gas when exposed to the heat in a bath of molten metal, in said socket" in the claim. There is insufficient antecedent basis for this limitation in the claim.

The above mentioned limitation is not disclosed in the specification.

7. Claim 55 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Line 11 of Claim 55 reads: "one or both of said inner tubular shield or said tongue being secured to said outer shield". The claim is indefinite due to the non-equivalent alternative terms "or".

Claim Rejections - 35 USC § 102

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-6, 16, 18-24, and 46-51 are rejected under 35 U.S.C. 102(b) as being anticipated by Yedidiah.

Yedidiah discloses a molten metal pump 10 (Figs. 1&3A) comprising a pot means (see Fig. 1), a pump member 32 adapted to be disposed in a bath of a heated molten metal, and to move a stream of the molten metal as the pumping member is driven in a path of motion; a housing 12 at least partially enclosing the pumping member; shielding means 24 and 26 carried on the pump housing, the shielding means having an internal shaft-receiving opening; a power

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device 40 adapted to be supported above the bath of molten metal, and to be actuated in a powered motion; means 44 for connecting the power device to the pumping member to move the pumping member in said path of motion, comprising a pumping shaft 30 having an upper end connected to the power device so as to be moved when the power device is actuated, and a lower driving end connected to the pumping member 32 to drive the pumping member 32 in the path of motion when the power device is actuated; the shaft having a first coefficient of thermal expansion and the shield means having a different coefficient of thermal expansion; and the shaft being telescopically disposed in the shield means out of contact with the molten metal, and forming a chamber between the shaft and the shielding means sufficient to permit thermal expansion of the shaft without imposing a radial thermal stress on the shielding means, the shaft further having an elongated drive element and an elongated shield assembly, the shield assembly surrounding and form a space between the drive element and the shield assembly sufficient to permit thermal expansion of the drive element (column 3, lines 29-34).

Regarding claims 2 and 19, Yedidiah shows that the pumping member is rotated in the path of motion (Fig. 1).

Regarding claims 3 and 20, Yedidiah shows that the power device is a motor 40 (Fig. 1) connected to the pumping shaft.

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Regarding claims 4 and 21, Yedidiah shows that the pumping member is an impeller pumping element (Figs 1&3A; column 3, lines 29-34).

Regarding claims 5, 6, 22 and 23, Yedidiah shows that the pumping shaft is made of stainless steel (column 3, lines 26-27).

Regarding claim 24, Yedidiah shows that the shaft is formed of a steel alloy (column 3, lines 26-27) that has sufficient torque characteristics as to be capable of rotating the member in the molten metal, and the shield means is formed of a ceramic material (column 3, lines 12-17) with sufficient heat resisting characteristics as to withstand the heat of the molten metal as the pumping member is being rotated.

Regarding claim 47, Yedidiah shows that wherein said drive element comprises steel (column 3, lines 26-27).

Regarding claim 48, Yedidiah shows that wherein said shield assembly is at least partially comprised of ceramic (column 3, lines 12-17).

Regarding claim 49, Yedidiah shows that the pumping member is an impeller 32.

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Regarding claim 50, Yedidia shows that the shield assembly further comprises inner and outer telescoping shield members 24 and 26 (Fig. 1).

Regarding claim 51, Yedidia shows that a substantial length of an inner diameter of the inner shield is greater than an outer diameter of an overlapped portion of said drive element (Fig. 1).

9. Claims 1-4, 7-8, 10 and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Gehrm.

Gehrm discloses a molten metal pump 10 (Fig. 2) comprising a pot means 100, a pump member 48 adapted to be disposed in a bath of a heated molten metal, and to move a stream of the molten metal as the pumping member is driven in a path of motion; a housing 12 at least partially enclosing the pumping member; shielding means 52 and 56 carried on the pump housing, the shielding means having an internal shaft-receiving opening; a power device 38 adapted to be supported above the bath of molten metal, and to be actuated in a powered motion; means for connecting the power device to the pumping member to move the pumping member in said path of motion, comprising a pumping shaft 42 having an upper end connected to the power device 38 so as to be moved when the power device is actuated, and a lower driving end connected to the pumping member 48 to drive the pumping member in the path of motion when the power device is actuated; the shaft having a first coefficient of thermal expansion and the shield means having a different coefficient of thermal expansion; and the shaft being

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telescopically disposed in the shield means out of contact with the molten metal, and forming a chamber between the shaft and the shielding means sufficient to permit thermal expansion of the shaft without imposing a radial thermal stress on the shielding means (column 5, lines 9-13).

Regarding claim 2 Gehrm shows that the pumping member is rotated in the path of motion (Fig. 2).

Regarding claim 3 Gehrm shows that the power device is a motor 38 (Fig. 2) connected to the pumping shaft.

Regarding claim 4 Gehrm shows that the pumping member is an impeller pumping element 48 (Figs 2).

Regarding claim 7, Gehrm shows that the shielding means comprises an elongated tubular shield 56 telescopically enclosing the pumping shaft, the tubular shield having a lower end attached to the pump housing 12, and an upper end, the tubular shield having a length such that the upper end is disposed above the metal surface of the bath of molten metal (Fig. 2).

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Regarding claim 8, Gehrm shows that the pumping shaft is rotatably connected to the pumping member (Fig. 2), and the tubular shield 56 encloses the pumping shaft but does not rotate therewith.

Regarding claim 10, Gehrm shows that the tubular shield includes: an outer tubular shield 56 having a lower end attached to the pump housing; an inner tubular shield 52 telescopically disposed in said outer tubular shield and being attached thereto; the inner tubular shield having a bore with a diameter greater than the diameter of the pumping shaft, and enclosing the pumping shaft to form a chamber therearound; the lower end of the inner shield forming a shoulder; and a structure disposed on the lower end of the shaft engaging the shoulder to locate the lower end of the shaft with respect to the inner shield (Fig. 2).

10. Claims 1-5, 7-9, and 16 are rejected under 35 U.S.C. 102(b) as being anticipated by Gilbert et al.

Gilbert et al. disclose a molten metal pump 10 (Fig. 2&3) comprising a pot means (not shown), a pump member 40 adapted to be disposed in a bath of a heated molten metal, and to move a stream of the molten metal as the pumping member is driven in a path of motion; a housing 38 at least partially enclosing the pumping member; shielding means 28, 32 and 34 carried on the pump housing, the shielding means having an internal shaft-receiving opening; a power device 60 adapted to be supported above the bath of molten metal, and to be actuated in a

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powered motion; means for connecting the power device to the pumping member to move the pumping member in said path of motion, comprising a pumping shaft 30 having an upper end connected to the power device so as to be moved when the power device is actuated, and a lower driving end connected to the pumping member 40 to drive the pumping member in the path of motion when the power device is actuated; the shaft having a first coefficient of thermal expansion and the shield means having a different coefficient of thermal expansion; and the shaft being telescopically disposed in the shield means out of contact with the molten metal, and forming a chamber between the shaft and the shielding means sufficient to permit thermal expansion of the shaft without imposing a radial thermal stress on the shielding means (Fig. 2).

Regarding claim 2, Gilbert et al. show that the pumping member is rotated in the path of motion (Fig. 2).

Regarding claim 3, Gilbert et al. show that the power device is a motor 60 (Fig. 2) connected to the pumping shaft.

Regarding claim 4, Gilbert et al. show that the pumping member is an impeller pumping element 40 (Fig 2).

Regarding claim 5, Gilbert et al. show that the pumping shaft is made of steel (column 2, lines 28-32).

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Regarding claim 7, Gilbert et al. show that the shielding means comprises an elongated tubular shield 34 telescopically enclosing the pumping shaft, the tubular shield having a lower end attached to the pump housing, and an upper end, the tubular shield having a length such that the upper end is disposed above the metal surface of the bath of molten metal (Fig. 2).

Regarding claim 8, Gilbert et al. show that the pumping shaft 30 is rotatably connected to the pumping member 40, and the tubular shield 34 encloses the pumping shaft but does not rotate therewith (Fig. 2).

Regarding claim 9, Gilbert et al. show that the pumping shaft is formed of a steel alloy (column 2, lines 28-32) that has sufficient torque characteristics as to be capable of rotating the pumping member in the molten metal, and the tubular shield is formed of ceramic material (column 3, lines 49-52) with sufficient heat-resisting characteristics as to withstand the heat of the molten metal as the pumping member is being rotated.

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Allowable Subject Matter

11. Claims 11-14, 25-27, 52-54, 56, and 62-64 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
12. Claims 15, 28, 55 and 61 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Prior Art

The prior art made of record but not relied upon is considered pertinent to applicant's disclosure and consists of 3 patents.

Cooper is cited to show a submersible molten metal pump.

Gilbert et al. (5,165,858) is cited to show an impeller for a molten metal pump.

Sweeney et al. is cited to show another molten metal pump.

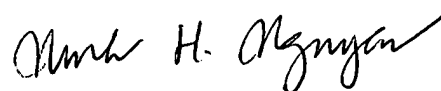
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Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Ninh Nguyen whose telephone number is (703) 305-0061. The examiner can be normally reached on Monday-Friday from 8:00 A.M. to 5:30 P.M.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward Look, can be reached at (703) 308-1044. The fax number for this group is (703) 305-3588.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0861.



Ninh H. Nguyen
Patent Examiner
Art Unit 3745

nhn
August 30, 1999



EDWARD K. LOOK
SUPERVISORY PATENT EXAMINER
GROUP 3700

8/30/99